

REMARKS

The Examiner has placed the application in FINAL and indicated that "Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action." Applicant respectfully disagrees and requests that the Examiner reconsider the indication of a FINAL rejection.

In this regard, Applicant respectfully points out that no amendments were made to any of the independent claims in response to the first office action. Rather, Applicant argued against the Section 102/103 rejections based primarily on the Reddy reference. These arguments appear to have been persuasive as the rejections based on Reddy have been withdrawn. The newly presented Section 103/103 rejections based primarily on the Lu and Cole references were NOT prompted by any claim amendments made by Applicant. Accordingly, the Examiner's indication of a FINAL office action "necessitated" by "Applicant's amendment" appears to have been made in error. Applicant requests reconsideration and withdrawal of the final office action.

In view of the apparent incorrect indication of FINAL, entry of this amendment and reconsideration of the application as now presented is respectfully requested.

Claims 5 and 20 were objected to under 35 CFR 1.65(c) as being of improper dependent form. Claims 5 and 20 have been amended to address the noted objection and further limit claims 1 and 16. Claims 5 and 20 should now be in condition for favorable action and allowance. Claim 36 has been amended in a similar manner, and should be allowable for at least the same reasons.

Claims 8, 23 and 39 were rejected under 35 U.S.C. 112, second paragraph. Claims 8, 23 and 39 have been amended to address the issue noted by the Examiner by including in each of

the claims the language of the other claimed to which reference was made. Withdrawal of the Section 112 rejection is requested.

Claims 1, 13, 16 and 28 were rejected under 35 U.S.C. 102(e) as being anticipated by Lu. Applicant respectfully traverses.

Turning first to claim 1, Applicant claims that the upstream and downstream bit rate requirements are determined for a user application and that the duplexing scheme of the modem is adapted to meet those user application needs based on a desired duplexing ratio set by the determined bit rates.

In Lu, there is teaching of adapting the data rates for communication, but there is no teaching or suggestion for adapting the duplexing scheme implemented by the modem. For example, Lu teaches a range of available values for a SendWindow field. This SendWindow field relates to a queue whose size is adjusted based on the SendWindow field value to adapt the data rate for either upstream or downstream communications. For faster communications rates, the SendWindow field value is increased and thus a larger sized communications queue is made available for the desired communication. Conversely, when the communication rate slows the SendWindow field value is reduced to provide a smaller queue.

The foregoing operations in Lu are performed in the context of an available and set duplexing scheme (such fixed duplexing schemes were specifically distinguished by Applicant: see, Specification, page 18, lines 15-19). As an example, Lu refers to MDSL technology which supports a set down/up duplexing ratio of 3.646:1 on a fixed duplexing scheme. The actual duplexing scheme supported by the modem does not change during operation of the Lu system. What does change is how carriers in that duplexing scheme are used based on communications

needs. The degree to which the carriers are used is modified in Lu by changing the value in the SendWindow field so as to change the size of the transmit queue and thus modify the supported rate of communication using a fixed duplexing scheme of channels.

This operation and structure in Lu is different than that claimed by Applicant. In Claim 1, for example, the actual duplexing scheme implemented by the DSL modem is adapted so as to support at least the desired duplexing ratio. There is no calculation in Lu of a desired duplexing ratio. Rather, there is a determination in Lu of a desired communications rate, within the context of a preestablished 3.646:1 duplexing ratio set by MDSL, and then an adjustment in SendWindow field value is made to adapt the rate of communications. Throughout that rate setting/adjustment process, the MDSL duplexing scheme supported by the modem, for example, remains the same and changes are instead made to the transmit queue in order to vary communications rate. No calculation of a desired duplexing ratio, or adaptation of the modem supported duplexing scheme to meet the desired ratio, as is claimed by Applicant, is made in Lu.

In view of the foregoing, Applicant respectfully submits that claim 1 is not anticipated by Lu.

The Examiner has cited to Lu col. 21, lines 33-67 in support of the rejection. It is noted by Applicant that in this section of Lu, the reference to a "ratio" is a reference to the ratio of the upstream and downstream communications rates (see, lines 34-35) to each other. The adjustments and changes mentioned by Lu in this teaching relate to adjusting the speed of communications (see, lines 53-54) on the uplink and downlink, and NOT to making an adjustment in the duplexing scheme supported by the modem. As mentioned above, that duplexing scheme is fixed in Lu by the choice of DSL technology (for example, MDSL). There

is no fixed duplexing scheme in Applicant's claimed invention. Rather, a desired duplexing ratio is determined and then the duplexing scheme of the modem is adapted (adjusted or changed) to at least approximate the desired duplexing ratio. It is in this way that the claimed invention, with its adaptable duplexing scheme, clearly distinguishes over the teachings of Lu.

Claim 16 is asserted to define over Lu for at least the same reasons as claim 1.

Claims 2-3 and 17-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Widrow. Applicant respectfully traverses and submits that these dependent claims are patentable over the cited art for at least the same reasons as claims 1 and 16.

Applicant further submits that Widrow's teachings are limited to filtering to support simultaneous two-way communications. There is no teaching or suggestion in Widrow for using the filtering operations for the purpose of adapting the duplexing scheme (through alterations in upstream and downstream bandwidth). Claims 2-3 and 17-18 accordingly distinguish over Lu and Widrow.

Claims 4 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Cole. Applicant respectfully traverses and submits that these dependent claims are patentable over the cited art for at least the same reasons as claims 1 and 16.

Applicant further submits that the idle cell removal teachings in Cole are not pertinent to the claimed invention. In Cole, idle cells are removed after data is received and then data flow rates are calculated based on the received communication minus the idle cells. In the claimed invention, however, the idle cells are accounted for prior to communication in order to determine what the rate needs of the communication would be without the inclusion of idle cells. These idle cell corrected rate needs then influence the determination of the required upstream and

downstream rates which drive determination of the desired duplexing ratio and the adapting of the modem's duplexing scheme (see, claims 1 and 16). There is no teaching or suggestion in Cole to engage in idle cell removal in the context of a to be transmitted communication and the adaptation of a duplexing scheme for the modem. Claims 4 and 19 accordingly distinguish over Lu and Cole.

Claims 14 and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Shimura. Applicant respectfully traverses and submits that these dependent claims are patentable over the cited art for at least the same reasons as claims 1 and 16.

Additionally, Applicant submits that Shimura is not material to the claimed invention. Shimura teaches monitoring noise on a DSL channel, and then deciding, if the channel is noisy, not to connect to that channel. This is quite different from Applicant's claimed invention where the communication already exists on a subcarrier, it is monitored for noise during use, and then if the noise exceeds a threshold then the subcarrier is abandoned (i.e., dropped for that communication). There is no teaching or suggestion in Shimura for the claimed operation to abandon the subcarrier in view of excess monitored noise. Claims 14 and 29 accordingly distinguish over Lu and Shimura.

Claims 15 and 30 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lu in view of Bullman. Applicant respectfully traverses and submits that these dependent claims are patentable over the cited art for at least the same reasons as claims 1 and 16. Applicant further submits that although Bullman recognizes the use of echo cancellation in overlap scenarios, there is no teaching or suggestion in Bullman for the duplexing scheme which results in the overlap

being adapted in the manner claimed. Claims 15 and 30 accordingly distinguish over Lu and Bullman.

Claim 31 was rejected under 35 U.S.C. 102(e) as being anticipated by Cole. Applicant respectfully traverses.

Claim 31, like claims 1 and 16, includes a limitation for adapting the DSL duplexing scheme to at least support a desired duplexing ratio determined by upstream/downstream bit rates. Claim 31 further states that the upstream/downstream bit rates have been adjusted by the removal of idle cells. While Cole does teach idle cell removal so as to calculate used data rates, there is no teaching or suggestion in Cole for using such determined data rates for the claimed purpose of calculating a desired duplexing ratio and then adapting the DSL duplexing scheme to approximate the desired ratio. Applicant accordingly submits that claim 31 is not anticipated by Cole.

More specifically, Applicant notes that Cole recognizes that ADSL technology defines a certain duplexing scheme with respect to the supported tones (see, page 1, lines 36-40). The process implemented by Cole is performed within the context and limitations of the selected ADSL technology and is a fixed duplexing scheme (such fixed duplexing schemes were specifically distinguished by Applicant: see, Specification, page 18, lines 15-19). What Cole teaches is a process wherein the bit loading on the tones of the ADSL connection are dynamically adjusted according to communications needs. Thus, received communications are monitored, idle cells are discarded, and the dataflow needs of the communication are determined (page 5, lines 1-5). If the dataflow needs exceed a first threshold (indicating a higher need), then the bit loading on one or more tones of the ADSL connection is increased so as to increase the

overall communications rate while most efficiently using the available tones of the fixed duplexing scheme (page 5, lines 11-18). Conversely, if the dataflow needs are less than a second threshold (indicating a lower need), then the bit loading on one or more tones of the ADSL connection is decreased so as to decrease the overall communications rate while still most efficiently using the available tones of the fixed duplexing scheme (page 5, lines 29-33).

The process described in Cole for increasing/decreasing bit loading on the tones of an ADSL communication does not teach or suggest the claimed operation for adapting the duplexing scheme of the DSL communication. Such an adaptation of the duplexing scheme, as claimed, effectuates a changes in the number and location of tones (subcarriers) which are allocated to the DSL communication. The Cole process, on the other hand, does not alter, change or adapt the number of tones for the ADSL communication, but instead alters, changes or adapts the bit loading provided on each of the tones in the fixed scheme with respect to the bit rate needs of the communication. The number and availability of the tones in Cole constituting the duplexing scheme is not adapted in response to the idle cell adjusted dataflow requirements of the communication. Instead, and in contrast to the claimed invention, the tones are fixed in terms of their number (i.e., the duplexing scheme is fixed) while the manner with which each of those tones is used, and more specifically how the tones are bit loaded by the communication, is adapted by Cole. This adaptation in Cole is quite different from the claimed invention and clearly does not anticipate or suggest that invention for adapting the DSL duplexing scheme.

In view of the foregoing, Applicant respectfully submits that claim 31 is not anticipated by Cole.

Claim 36 was rejected under 35 U.S.C. 103(a) as being unpatentable over Cole. Claim 36 has been amended is believed to distinguish over Cole. Applicant claims that the implemented duplexing scheme ratio defines certain numbers and locations of the subcarriers less than in a total available upstream/downstream bandwidth. As discussed above, the numbers and locations of tones for the adapted duplexing scheme is distinct from the bit loading adaptation disclosed by Cole. A similar argument is made with respect to claims 5 and 20 in comparison to the SendWindow driven rate adaptations taught by Lu.

Claim 32 was rejected under 35 U.S.C. 103(a) as being unpatentable over Cole in view of Lu. Applicant respectfully traverses and submits that this dependent claim is patentable over the cited art for at least the same reasons as claim 31. Applicant further submits, for at least the reasons recited above, that Lu similarly fails to teach discrete duplexing schemes as claimed. It will be remembered that Lu teaches an MDSL communication with a fixed duplexing scheme and adaptation of data rates given that scheme. Lu is thus similar to Cole in terms of teaching rate adaptation. In any event neither reference teaches the claimed plurality of discrete duplexing schemes, and the adaptive duplexing scheme selection, as claimed. Claim 32 accordingly distinguishes over Lu and Cole.

Claims 33 and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cole in view of Widrow. Applicant respectfully traverses and submits that these dependent claims are patentable over the cited art for at least the same reasons as claim 31.

Claim 44 was rejected under 35 U.S.C. 103(a) as being unpatentable over Cole in view of Shimura. Applicant respectfully traverses and submits that this dependent claim is patentable over the cited art for at least the same reasons as claim 31.

Additionally, Applicant submits that Shimura is not material to the claimed invention. Shimura teaches monitoring noise on a DSL channel, and then deciding, if the channel is noisy, not to connect to that channel. This is quite different from Applicant's claimed invention where the communication already exists on a subcarrier, it is monitored for noise during use, and then if the noise exceeds a threshold then the subcarrier is abandoned (i.e., dropped for that communication). There is no teaching or suggestion in Shimura for the claimed operation to abandon the subcarrier in view of excess monitored noise. Claim 44 accordingly distinguishes over Cole and Shimura.

Claims 45 and 46 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cole in view of Bullman. Applicant respectfully traverses and submits that these dependent claims are patentable over the cited art for at least the same reasons as claim 31. Applicant further submits that although Bullman recognizes the use of echo cancellation in overlap scenarios, there is no teaching or suggestion in Bullman for the duplexing scheme which results in the overlap being adapted in the manner claimed. Claims 45 and 46 accordingly distinguish over Cole and Bullman.

Claims 6-12, 21-27, 35, 37-38 and 40-43 were (provisionally) rejected for nonstatutory obviousness-type double patenting. Applicant submits hereto an appropriate terminal disclaimer which obviates this (provisional) rejection. Allowance of claims 6-12, 21-27, 35, 37-38 and 40-43 is accordingly requested.

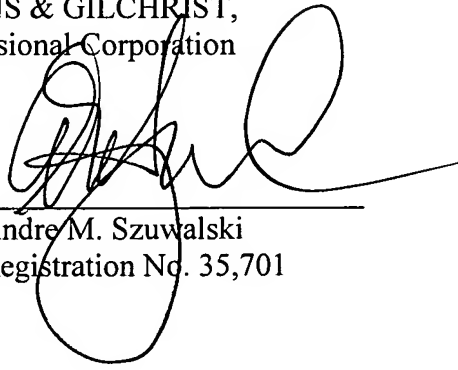
CUSTOMER NO. 30430

PATENT APPLICATION
Docket No. 01-OT-080

In view of the foregoing, Applicant respectfully submits that the application is now in condition for favorable action and allowance.

Respectfully submitted,
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